Jan. 29, 1957 W. L. JOHNSON 2,779,090

TOOL FOR REMOVING AND INSTALLING VEHICLE FANS

Filed Sept. 18, 1953

Fig. 1

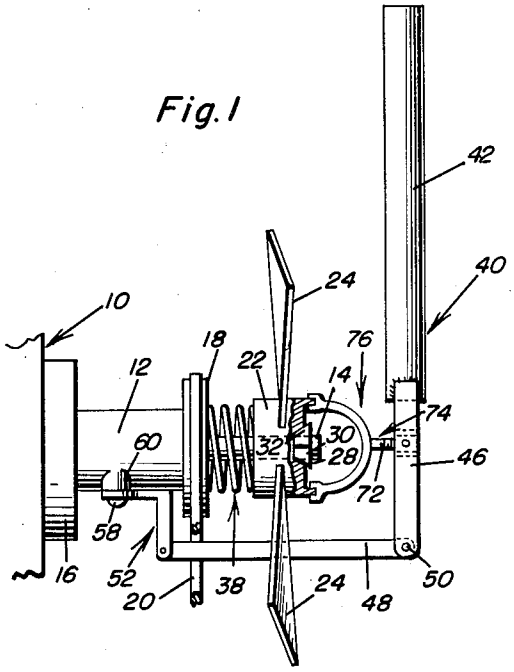


Fig. 4

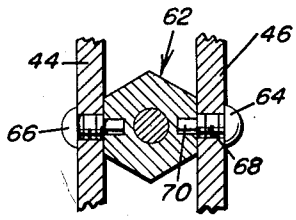
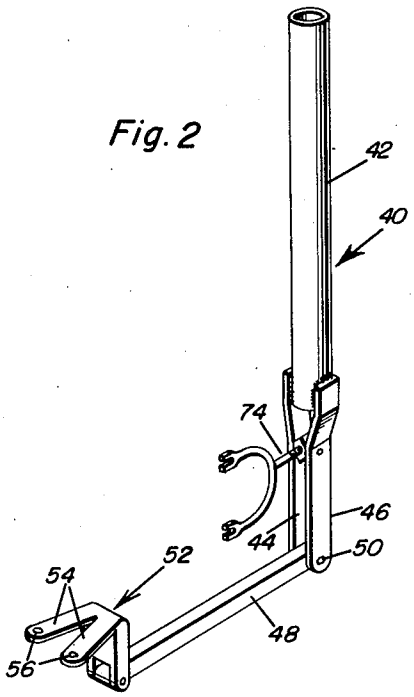


Fig. 2



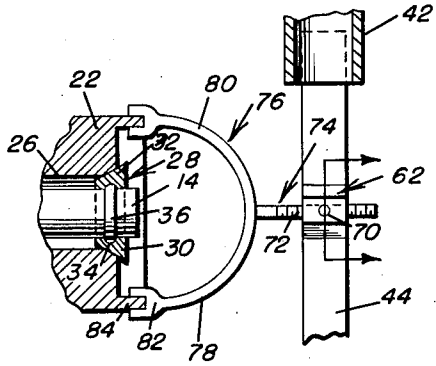


Fig. 3

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TOOL FOR REMOVING AND INSTALLING VEHICLE FANS

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1 Claim. (Cl. 29—267)

This invention relates generally to accessory tools for tractors and pertains more particularly to a unit for aiding in the removal and installation of tractor fans.

A primary object of this invention is to provide a novel and improved tool mechanism particularly adapted for use in conjunction with John Deere tractors for aiding and expediting the compression of the fan hub retaining spring utilized therein such that the fan and its associated hub may be readily removed from the tractor.

These, together with other objects and advantages which will become subsequently apparent, reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view showing the tool in use;

Figure 2 is a perspective view of the tool;

Figure 3 is a vertical partial section on enlarged scale showing details of the tool and the associate fan hub construction; and

Figure 4 is an enlarged sectional view taken substantially on the plane of section line 4—4 in Figure 3.

Referring now more particularly to the drawings, the reference numeral **10** indicates generally an internal combustion engine cylinder block, a portion thereof only being shown, and the reference character **12** indicates a bearing support for a fan shaft **14**, the support being provided with a flanged portion **16** so as to be removably secured to the engine block **10**. A driving pulley **18** is suitably threaded to the shaft **14** and is adapted to receive a fan belt **20** driven from the crankshaft pulley in a conventional manner. Reference numeral **22** indicates a fan hub which is provided on its outer surface with a series of circumferentially spaced fan blades **24** and which is provided with an enlarged longitudinal bore **26** having an outwardly beveled end portion in the manner shown most clearly in Figures 1 and 3. The bore **26** is of larger diameter than the shaft **14** and the beveled portion of this bore is adapted to be urged into frictional engagement with the tapered surface of a collar assembly indicated generally by the reference character **28**, and which includes a pair of semi-circular elements **30** and **32**, each of which is provided with an arcuate groove **34** on its inner surface for engagement with a snap ring **36** engaged within a groove provided adjacent the end of the shaft **14**. The frictional engagement is accomplished by the action of a compression coil spring **38** which is interposed between the rear surface of the hub **22** and the forward surface of the pulley member **18**. The above described construction is conventional in nature and is of the general type utilized currently in John Deere tractors.

With reference now more particularly to Figures 1 and 2, it will be noted that the tool assembly incorporates a lever member indicated generally by the reference character **40** which is divided into two sections or portions, namely, a handle portion **42** and an extension portion

at one end of the handle portion which embodies a pair of arm members **44** and **46** securely fastened to the handle portion and disposed in spaced parallel relation in the manner shown. A link **48** is pivotally secured as by pin **50** to the free ends of the arm members **44** and **46**, the link being disposed between the arms in the manner shown. At the opposite end of the link there is provided a bracket assembly indicated generally by the reference character **52** which includes a pair of dovetail ear elements **54** each having an aperture **56** therein for the reception of fastening elements **58** as shown most clearly in Figure 1. These ears and their apertures **56** are so formed as to register with threaded apertures in a pair of bosses **60** provided on the undersurface of the bearing support **12**. It is to be realized that in order to utilize the tool it is necessary to remove the accessory supported normally by these boss portions.

As seen most clearly in Figures 2 and 4, a sleeve member indicated generally by the reference character **62**, which may conveniently take the form of a nut of hexagonal configuration such that its opposite sides may be disposed in abutting relation to the arms **44** and **46**, is disposed therebetween. Trunnion pin members **64** and **66** including threaded shank portions **68** and free end journaled portions **70** are threadedly received in suitable apertures in the arms **44** and **46** and recesses in the opposite sides of the nut member **62** receive these bearing portions **70** such that the nut member is trunnioned thereby between the arms.

The nut member includes a threaded bore which receives the threaded shank portion **72** of a pressure foot assembly, indicated generally by the reference character **74**, and it will be noted that this shank portion is threaded throughout a substantial extent of its length so that the tool may be adapted in effective size to the corresponding condition of removal or installation. The pressure foot also includes a semi-circular yoke portion indicated generally by the reference character **76** integral with the shank **72** and which presents a pair of spaced leg members **78** and **80** terminating at their ends in the enlarged portions **82** which are notched in the manner shown to straddle and seat upon the peripheral flange **84** in the fan hub member **22**.

When utilizing the tool for the removal or installation of a tractor fan, it is merely necessary to remove the radiator from the associated tractor and bolt the bracket assembly **52** to the previously described boss portions **60** after removing the accessory which is normally attached thereto. Then, the shank **72** of the pressure foot assembly **74** is adjusted relative to the nut member **62** in such a manner that the handle portion **42** of the lever assembly is properly positioned to clear all obstructions within the engine department of the tractor so that when the tool handle is drawn toward the rear of the tractor engine, the hub **22** will be slid longitudinally on the shaft **14** to permit either the removal or installation of the members **30** and **32**.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claim.

What is claimed as new is:

A tool for removing and installing tractor fans comprising, an elongated lever member, said member including a handle portion and a pair of spaced arms forming an extension at one end of said handle portion, a link pivotally received at one end between the free ends of

said arms, an attaching bracket pivotally secured at the other end of said link adapted for attachment to the bearing support of a tractor fan shaft, a sleeve member disposed between said arms adjacent the point of juncture of said arms and said handle portion of the lever member, a pin threadedly engaged with each of said arms, said pins including inner end portions projecting within said sleeve member and providing a trunnion support therefor, said sleeve having a threaded bore, and a pressure foot including a threaded shank portion received in said bore and a semi-circular yoke portion presenting

a pair of spaced legs, each terminating in a notched portion defining a foot for straddling the rim of a tractor fan hub.

References Cited in the file of this patent

UNITED STATES PATENTS

1,268,480	Lockwood	June 4, 1918
1,517,423	Hanson	Dec. 2, 1924
1,621,237	Davis	Mar. 15, 1927
1,734,420	Curtis	Nov. 5, 1929